



# UNITED STATES NAVY

## Medical News Letter

Vol. 47

Friday, 11 March 1966

No. 5



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*Change of Address*

Please forward changes of address for the News Letter to Editor: Bureau of Medicine and Surgery, Navy Department, Washington, D.C. 20390 (Code 18), giving full name, rank, corps, and old and new addresses.

FRONT COVER: USS CONSOLATION (AH 15). This hospital ship of the HAVEN class, commissioned 22 May 1945, was at Pearl Harbor on VJ Day, and spent the rest of the year giving medical support to forces occupying Japan, rehabilitating Allied Prisoners of War, and transporting both patients and troops back to the United States. She later served as a transport on America's East Coast and in the later forties was home ported at Hampton Roads, taking part in annual fleet exercises. She was the first hospital ship to arrive in Korean waters and from 16 August 1950 to a period after the Korean cease-fire carried on extensive medical functions in support of United Nations forces. Fitted with a helicopter landing platform in mid-1951 at San Diego, she became on 18 December 1951 the first hospital ship to receive a casualty directly from the battlefield by helicopter. During her Korean duty her medical staff cared for 18,731 military and civilian patients of eleven nationalities, including delivery of a Korean baby. In 1954 she participated in the evacuation of civilians from communist-held North Vietnam to South Vietnam. She later again supported United Nations forces in Korea, returning to San Francisco with several hundred patients in March 1955. After decommissioning 30 December 1955, the CONSOLATION was chartered by the Navy to the People to People Health Foundation. Renamed the HOPE, and staffed by American medical personnel, she has since visited many world areas to carry on a healing mission and to train citizens of the countries visited in modern medical techniques and public health procedures.

The issuance of this publication approved by the Secretary of the Navy on 4 May 1964.

## FEATURE ARTICLE

### NEW CONSIDERATIONS IN DIGITALIS THERAPY

*Dr. Joseph Ellis and Dr. E. Grey Dimond, Scripps Clinic and Research Foundation, La Jolla, California.*

Several challenges to the physician in prescribing digitalis have been: Is there a beneficial effect upon the heart from a "little digitalis" or must a full digitalizing dose always be given? Does digitalis have a beneficial or harmful effect upon a diseased, but competent heart? Can "Digitalization" have an objective, measurable basis instead of the difficult, nebulous method which is described as "give enough until the desired result is achieved or until the patient becomes toxic"?

A rational approach to answering these questions has come out of fundamental studies of digitalis action and the results can be applied to extending clinical use.

Cardiac output is the product of heart rate and stroke volume. Stroke volume is defined by the change in ventricular volume from the end of diastole to the completion of systole. The stroke volume depends on the filling pressure of the ventricle, its distensibility, the arterial pressure against which the ventricle contracts, and finally, the force of contraction of ventricular muscle. When contraction is increased, myocardial fibers shorten more rapidly, systolic ejection is accelerated, the rate of rise in ventricular pressure is increased and contraction is more brief. Stroke volume may or may not be increased depending on the direction and magnitude of changes of the other variables named above, and, similarly, cardiac output may remain unaltered in the face of increased contractility even though ventricular performance has, in one sense, clearly "improved". For instance, if the heart contracts more vigorously, but the filling pressure falls, the volume of each stroke may not change at all, but will be expelled at a faster rate. An observer measuring only the cardiac output would have to report no change, but were he measuring the speed of contraction of the heart muscle or the rate at which blood is accelerated into the aorta, he would report

significant increases. Such is the case with the effect of digitalis on the diseased but competent heart and the normal heart.

In recent years measurements made in patients with compensated or entirely normal cardiovascular systems have shown that digitalis directly augments myocardial contraction in both its force and speed, and these effects may be recorded by catheter within the ventricle or by noting abbreviation of phases within the cardiac cycle with external phonocardiograms and indirect carotid arterial tracings.<sup>2</sup> Some evidence of more forceful contraction can be registered after as little as 20% of the full dose of digitalis though larger doses bring greater responses.

Two other points of digitalis physiology are worth mentioning. The effect on muscle contraction is not unique to the heart, for digitalis also constricts arterial and venous smooth muscle. This can be demonstrated in a vascular bed experimentally "isolated" from the rest of the cardiovascular system—done conveniently in the human forearm.<sup>10</sup> Administration of digitalis systemically leads to a rise in arterial pressure, an increase in venous tone and a decrease in blood flow within the isolated vascular bed. In addition, this effect on muscle contraction is a basic and direct one and does not depend on reflex autonomic activity. The cardiac and peripheral vascular responses measured by themselves do not change qualitatively after destruction or blockade of the autonomic nervous system.<sup>2</sup>

The relief felt by patients following treatment for heart failure with digitalis originates from a greater cardiac output produced by improved cardiac contraction acting upon an overloaded ventricle. This effect overshadows all others. Cardiac muscle contraction will improve when digitalis is given to patients with competent hearts but no significant changes in cardiac output occur due to simultaneous changes in arterial and venous tone and filling pres-



tures. There is no reason to believe digitalis harms this category of patients and good reason to believe that the drug has a beneficial influence during periods of great stress to the heart as arise in elderly patients having surgery or patients of all ages undergoing open heart repair with all of its cardiac depressant effects—*anesthesia, incision, manipulation, suturing*. Neither is there any reason to withhold careful doses of digitalis in treated cardiogenic hypotension as following myocardial infarction or cardiac surgery.

In this clinical no-man's land where there may be no clear-cut bedside signs that signal maximum drug dose before toxicity, cautious and timid prescribing does not castrate the drug or ablate effectiveness; there are beneficial effects from small doses of digitalis, measurable in special ways and probably useful in these special circumstances.

Just as important as the effect of digitalis on the force of the heart beat is its effect on the rhythm of the heart beat in treating patients with congestive heart failure. In experimental animals, digitalis retards impulse formation in the sinoatrial node through vagal, anti-adrenergic, and direct effects. At the atrioventricular node digitalis prolongs the refractory period of conduction influencing the rate at which the ventricles might respond to the normal pacemaker impulse, and it shortens the refractory period of atrial and ventricular muscle, increasing the tendency to spontaneous ectopic firing from abnormal pacemaker sites. As opposed to the contractility response, these effects are very sensitive to changes in potassium concentration and autonomic nervous system activity.

Patterns are beginning to appear on the ins and outs of giving digitalis to patients who already have arrhythmias. There is a growing population of older individuals with pre-existing disease of the conduction system who eventually develop heart failure in whom reservations and qualifications about digitalis use have to be weighed. Digitalization gives poor results in patients who have congestive heart failure and first degree atrioventricular block, occasionally superseded by atrial fibrillation. Digitalis benefits patients who have regular ventricular rates with fixed second or third degree atrioventricular block and whose cardiac output is low. However, when the heart block is transient and conduction variable, digitalis will not act to stabilize the conduction defect. Similarly, digitalis may be hazardous in patients with Adams-Stokes disease, even those with clear-cut heart failure, the potential danger lurking

in the possibility of enhancing other foci of stimulation with a decrease in cardiac output. The first line of attack in patients with serious Adams-Stokes syncope spells is to capture the ventricular rate with an artificial pacemaker, temporarily assisting with a transvenous electrode as following myocardial infarction or with permanent pacemaker implantation when long standing heart block is the underlying condition. Digitalis then becomes beneficial in these patients once the ventricular beat is captured and controlled since their cardiac output is usually persistently low.

For prolonged refractory arrhythmias with a rapid atrial or ventricular mechanism counter shock cardioversion is becoming the treatment of choice. Most authorities advise curtailing or withholding digitalis before the procedure to reduce the hazard of post-conversion ectopic ventricular rhythms or depression of sinus pacemaker. In less lethal arrhythmias the role of digitalis is more firmly entrenched. The most ancient indication is atrial fibrillation with a rapid ventricular response where the therapeutic goal is under relatively precise control at the bedside—elimination of pulse deficit, a resting rate below 80 beats per minute and a rise to less than 100 beats per minute after mild exercise. Patients with repetitive episodes of paroxysmal supraventricular tachycardia are digitalized to render the heart more responsive to vagal maneuvers. Previously ineffective carotid sinus massage, for instance, may succeed after digitalis is given. Symptomatic atrial premature beats can be treated by digitalization.

Although all of the digitalis preparations act the same way once delivered to cardiac tissue, there are differences in absorption, metabolism and excretion. These have been most completely studied with digoxin and digitoxin.<sup>3-6</sup>

The metabolism and excretion of digoxin in patients with congestive heart failure has been charted by labeling the drug with tritium,  $H_2^3$ , and following the radioactivity of blood, urine, and stool. A dose of 1 mg. of tritiated digoxin given to a patient with congestive heart failure by the oral route will be 80% absorbed with peak blood levels reached within 30 to 60 minutes. One hundred minutes after administration the blood levels of this dose will be the same whether it is given by intravenous, intramuscular, or the oral route. The time taken for one half the administered dose to disappear from the blood will be 30 to 38 hours, regardless of the route of administration. The main excretory route is the glomerular filtrate. Within one day 35% of the dose



will appear in the urine in an unchanged form and after seven days 90% of the dose can be recovered in an unchanged form from the urine, the remainder appearing in the stool.

Because of the heavy reliance on the kidney for excretion of digoxin, coexistent renal failure prolongs the half-time two to three times normal up to 83 hours, with urinary excretion varying inversely with the level of blood urea nitrogen. Peritoneal dialysis will not affect the pattern of excretion since the drug does not appear in the dialysate in any but negligible amounts. On the other hand, severe liver disease will not alter the pattern of excretion of digoxin.<sup>9</sup>

Digitoxin is handled differently than digoxin.<sup>11</sup> It has been studied by following its radioactivity after labeling with C<sup>14</sup>. Absorption from the gastrointestinal tract is almost complete, the blood half-time is nine days, 90% of the drug is metabolized in the liver and the metabolites are mostly excreted in the urine; however, unchanged digitoxin may be detected in the urine up to 40 days after the administered dose. Digitoxin is similar to digoxin in that disease of the liver does not seem to significantly affect its metabolism. The tissue concentrations of the two drugs are slightly different. Counts made over the homogenized viscera of patients who died during or shortly after studies with radioactive digitalis showed that the heart had no exclusive affinity for digitoxin and that organ retained third, behind the liver and the kidneys. Digoxin showed greatest tissue concentration in the reverse order—heart, kidneys, and liver.

Despite a large amount of information on where it acts, how it acts, how much it takes to act, and how it is handled and excreted, it is ironical that there are more incidents of digitalis toxicity than ever before. The management of misuse has become a separate field in itself. As in the treatment of a bad hangover there is no better way of treating digitalis toxicity than simply stopping the drug. Replacing potassium when it is deficient is valuable, but should be avoided when there is no evidence of deficiency since excess potassium acts in concert with digitalis to depress conduction.<sup>8</sup> Several measures may be tried in temporizing with serious

toxic arrhythmias. Intravenous Sodium Versenate, by virtue of its calcium chelating action, has been found to restore sinus rhythm in a variety of arrhythmias due to digitalis.<sup>7</sup> The effect, however, may be shortlived. Dilantin 100 to 200 mg given slowly intravenously has been used to break ventricular or nodal tachycardia.<sup>1</sup> Beta-adrenergic blocking agents are still under study as possible useful drugs in rapid supraventricular or ventricular ectopic rhythms provided there is no coexistent cardiac failure.<sup>12</sup> Slow ventricular rates may respond to intravenous isoproterenol infusion or, preferably, to transvenous electrode pacing of the right ventricle.

More intimate understanding of the inotropic effect of digitalis may expand its clinical usage, keeping in mind its perverse effects in certain cases of pre-existing conduction system disease. Awareness of the different excretory patterns in the handling of digitoxin and digoxin is important in adjusting dosage in patients with co-existent renal disease. When digitalis toxic arrhythmias appear, considerable judgement may be necessary whether or not to intervene with supplemental potassium, experimental anti-arrhythmic drugs such as Sodium Versenate, Dilantin, or Beta-adrenergic blocking agents, or with attempts to capture and control the ventricular rate with isoproterenol, or artificial electrode pacing.

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## THE REBOUND PHENOMENON—FACT OR FANCY?

### EXPERIENCE WITH DISCONTINUATION OF LONG-TERM ANTICOAGULATION THERAPY AFTER MYOCARDIAL INFARCTION

By Robert Van Cleve MD. *Circulation XXXII (6):878-880, December 1965.*

There is considerable controversy regarding the recurrence of thromboembolic episodes following discontinuation of long-term anticoagulant therapy. Most reports from this country (table 1), claim a high incidence of thromboembolism after cessation of long-term anticoagulants. This is in striking contrast to what has been reported in some European studies. The question of a rebound state of hypercoagulability, especially after gastrointestinal bleeding necessitating stopping of anticoagulants, has been commented upon both in clinical and experimental studies. Others have considered that the reported increase in thromboembolism is due to the natural history of the underlying disease when the "protection" from anticoagulants has been removed.

The clinical studies supporting the concept of a rebound state of hypercoagulability following cessation of anticoagulant therapy have been mostly retrospective reviews. This paper reports the results of a prospective study in which long-term anticoagulant therapy for myocardial infarction was

either abruptly stopped or gradually tapered. It is aimed at examining the existence of a clinical state of rebound hypercoagulability.

#### Description of the Study

A total of 134 patients with previous myocardial infarctions had been on coumadin therapy for an average of 3.6 years. They were seen at the San Diego Naval Hospital Outpatient Officers' Clinic. This group of retired officers, all male, represented an intelligent, stable group with similar backgrounds who followed instructions closely. It was decided to discontinue coumadin therapy in these patients.

These patients were divided into two groups. Group-I patients had coumadin stopped gradually over 6 weeks and group-II patients had anticoagulation abruptly terminated. Due to administrative policy random selection of these groups was not possible, but in general, those who saw the author during the first 6 weeks were in group I, and those after that in group II. None of the patients was lost to follow-up. In a third of the patients whose coumadin was discontinued abruptly, prothrombin times were checked subsequently once or twice

From the Department of Medicine, San Diego Naval Hospital, San Diego, California.  
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Table 1

#### Review of Evidence for Enhanced Incidence Thromboembolic Events after Discontinuation of Long-term Anticoagulation\*

1953 Cosgriff (embolic disease)	17 pts. stopped; 12 had 14 emboli; 8 within 4 weeks, 6 within 3-23 months
1955 Alexander	— considered theoretical possibility
1956 Keyes	— 28 pts. stopped (½ due to bleeding); 14 MI's 3rd—20th month; 6 deaths
1958 Nichol	— 319 "abandoned" regimen; 20 died 1 mo; 18 mo. average follow-up 28% dead
1960 Dinon	— 66 stopped, highest recurrence 1st 6 weeks; 33% recurrence 1 yr.
1960 Thomas	— 13 (bleeding) stopped; 6 MI's 1 yr.; 4 deaths
1961 Kuhn	— 117 stopped; 5 deaths 1 month
1961 Sise	— 136 stopped; 53 recurred; 7 fatal 1 year; 45 stopped after bleeding, 14 of 20 recurrence in 4 weeks; 7 fatal 1 yr.; 16% mortality
1964 Van Cleve	— Total 134 with previous MI's stopped; 1 recurrence 6 weeks; 16 thromboses after 11 mo. average follow-up with 9 deaths

\* Note: None of the above series has had randomly selected controls.

weekly over a 2-week period. None remained above 16 seconds after this time.

In those patients tapered (group I), the dose was reduced at weekly intervals so that coumadin was stopped after the sixth week. The amount of reduction each week depended on the initial dosage, but was approximately 15 per cent of the original total dose. Prothrombin times were obtained on most patients at 1 or 2-week intervals. The interval before the prothrombin time reached 16 seconds or lower, varied from 1 to 5 weeks. The average time was 2.5 weeks. None remained elevated above 16 seconds after 6 weeks. These groups were followed for an average period of 12.2 months and 9.5 months. Group I comprised 63 patients; group II, 71.

### Results

There were no episodes of embolism. There was only one case of thrombosis (myocardial infarction) among the 134 patients belonging to groups I and II during the first 6 weeks after discontinuing coumadin. This occurred in a group-II patient 2 days after coumadin was stopped and his prothrombin time at the time of myocardial infarction was 23 seconds with a control of 13 seconds.

There were nine thromboses (eight myocardial infarctions and one cerebrovascular accident) with five deaths in group I. In group II, there were seven thrombotic episodes (all myocardial infarctions) with four deaths. There were four autopsies in the group-I patients. Two of these revealed old and recent myocardial infarctions. In two other patients who died suddenly at home, there was evidence of old infarction. In group II, three autopsies were obtained. Two revealed old and new myocardial infarctions. The third revealed aortic stenosis with much focal myocardial scarring, but only slight coronary arteriosclerosis.

No autopsies were performed on two patients. One of these patients died suddenly at home, and one died suddenly in the hospital. These were presumed to be coronary deaths.

Coumadin was stopped in 14 patients after an episode of gastrointestinal, genitourinary, or other bleeding. Two of this group died (14 per cent). These were all placed in group II.

### Discussion

This is the first reported study of a group of patients who were followed after long-term anticoagulation was stopped without specific indication (in 120 of 134). Most previous studies have been a tabulation of a retrospective collection of cases of those who have abandoned an anticoagulant program or in whom anticoagulants had to be stopped because of some contraindication to therapy. It is possible such selection may inject bias.

There was only one episode of thrombosis during the first 6 weeks after discontinuing coumadin in 134 patients. There was no notable difference among patients who had their coumadin stopped abruptly or gradually. These results suggest that there is no "rebound" hypercoagulability in respect to clinical thromboembolism following abrupt or gradual discontinuation of long-term coumadin therapy.

An increased risk of thrombosis after discontinuation of anticoagulation therapy following a bleeding episode has been noted by Sise et al. Of the 14 patients in this study in whom coumadin was stopped during a bleeding episode, two died. In contrast to Sise's study, no thrombotic episodes occurred during the first 6 weeks following cessation of therapy. One of these patients died suddenly during treatment of a recurrence of massive gastrointestinal bleeding. Several months previously he had had anticoagulation therapy stopped because of gastrointestinal bleeding.

### Summary

Long-term anticoagulant therapy (coumadin) was gradually tapered over a 6-week period in 63 patients, and stopped abruptly in 71. All of these patients had been on coumadin following myocardial infarction. A careful follow-up showed that there was no difference in the incidence of thrombotic events in the first 6 weeks after discontinuation of therapy, whether this was stopped abruptly or gradually. These results suggest that clinically recognized "rebound" thrombosis does not occur after long-term coumadin therapy is stopped. There appears to be no hazard inherent in stopping long-term coumadin therapy abruptly. A possible exception to this is patients whose therapy must be stopped because of bleeding episodes.

(The references may be seen in the original article.)



## HYPOTHYROIDISM SUBSEQUENT TO X-RAY THERAPY\*

Elmer C. Bartels MD and Ozgur Kusakcioglu MD\*\*, Department of Internal Medicine. *Lahey Clinic Foundation Bulletin* 14(2):64-71, 1965.

It has long been recognized that the thyroid gland is susceptible to the effect of ionizing radiation. This led to its early effective use in the treatment of hyperthyroidism, especially recurrent Graves' disease, and its present-day beneficial use in the therapy of thyroid cancer. Adverse effect on the thyroid is also known, as evinced by the late development of thyroid tumors in children having previous x-ray therapy to the neck or upper mediastinum. The frequent late development of hypothyroidism is now being observed in patients with Graves' disease treated by conventional doses of radioiodine.

Pohle reviewed the experience in the field of roentgen therapy of hyperthyroidism and reported that "thousands of patients with hyperthyroidism have been treated by radiologists of varying experience in this field of therapy, with the following results: 65 percent cures, 20 percent marked improvement and 10 percent failures." Soley and Stone reported that the average time between the initial roentgen treatment and the return to a euthyroid state was seven to eight months. One report of roentgen therapy for hyperthyroidism by Pittman in 1934 mentioned the resulting development of hypothyroidism in 4 of 99 patients treated.

In 1961, Winship and Rosvoll reported on a group of children who had cancer of the thyroid, all of whom had careful studies to elicit a history of previous radiation. They found that 80 percent of 286 patients had received therapeutic radiation to the head and neck at some time during infancy or childhood, most for a so-called enlarged thymus. The dose administered varied from 180 to 6000 r, with an average of 600 r. The average interval between radiation and discovery of the thyroid cancer was 8.6 years. In no instance was hypothyroidism a feature of the clinical picture, although it was mentioned that desiccated thyroid was administered after surgery to nearly all the patients in whom a large portion of the thyroid had been removed.

The development of thyroid tumors in children who received radioiodine was reported by Kogut

et al. Nodules developed in four of six patients under the age of 10 years; one patient had a low-grade follicular carcinoma. The development of thyroid cancer in children after roentgen or radioiodine therapy suggests that the thyroid cell in the child is extremely sensitive to radiation. There has been no report of thyroid tumor occurring in adults after radioiodine therapy. A review article by Lindsay and Chaikoff summarized the present known effects of irradiation on the thyroid with particular reference to the induction of thyroid neoplasms.

The development of hypothyroidism subsequent to radiation of the thyroid gland is receiving wide attention in the field of radioiodine treatment of hyperthyroidism. The incidence of hypothyroidism was first reported to be approximately 17 to 25 percent. Dunn and Chapman recently found this incidence to be about 40 percent at the 10th year, increasing 2 to 3 percent each year thereafter. The insidious development of hypothyroidism years after administration of radioiodine stresses the need for long-term observation of these patients to avoid overlooking hypothyroidism and reveals the obvious sensitivity of the thyroid gland to radiation. No feasible plan of dose determination of radioiodine seems possible that will reestablish normal function of the thyroid gland and avoid the development of hypothyroidism years later. The combination of radioiodine and antithyroid drugs has been suggested as a possible plan of therapy, however.

High voltage x-ray is now in common usage in the therapy of malignant lesions of the head, neck, and chest. The roentgen therapist accepts many conditions as possible side effects (Table 1), and to these must be added hypothyroidism which has been observed to develop in patients receiving radiation treatment for both breast malignancies and cancer of the head and neck regions. Recently, Markson and Flatman reported five patients suffering from a malignant disease not arising from the thyroid gland who became hypothyroid 1 to 36 months after receiving therapeutic irradiation to the neck. The basis of the present report is our experience with certain cases of hypothyroidism after irradiation.

\* Presented in part at the Fifth International Conference on Thyroid Disease, Rome, May 21, 1965.  
\*\* Resident in Internal Medicine.

tion which have come to the authors' attention; it does not, however, represent a statistical study of all patients at the Lahey Clinic Foundation who have received roentgen therapy, and thus no inferences can be drawn concerning incidence.

Table 1

Side Effects of High Voltage Therapy of Chest and Neck Region

Pneumonitis and pleuritis
Myocarditis and pericarditis
Myelitis
Decreased salivary gland function
Dental caries
Serous otitis media
Esophagitis—stomatitis
Laryngitis—tracheitis—vocal cord edema
Avascular necrosis of bones
Muscle contractures
Roentgen dermatitis

Clinical Observations

A total of 52 patients having clinical hypothyroidism has now been studied. These patients received roentgen treatment for cancer of the breast, thyroid and nasopharynx (Table 2). In 41 cases, hypothyroidism followed thyroidectomy and roentgen treatment for cancer of the thyroid, in 10 cases after mastectomy and roentgen treatment for breast cancer, and in 1 case after biopsy and roentgen treatment of cancer of the hypopharynx.

Table 2

Hypothyroidism Secondary to Roentgen Therapy

Primary Disease	No. of Patients
Cancer of thyroid	41
Cancer of breast	10
Cancer of hypopharynx	1
Total	52

*Cancer of the Hypopharynx.* This single instance occurred in a woman of 56 years who was first seen in October 1963 with a two-month history of sore throat. Biopsy of a lesion of the hypopharynx was reported as epidermoid carcinoma for which she received 20 treatments with Co<sup>60</sup>. Eight months

later objective hypothyroidism developed with a plasma cholesterol value of 380 mg per 100 ml. The protein-bound iodine was 3.5 mcg per 100 ml. Treatment with 120 mg of desiccated thyroid resulted in relief of the hypothyroid signs and symptoms. The plasma cholesterol value after treatment was 290 mg per 100 ml.

*Cancer of the Breast.* In 10 patients, hypothyroidism was observed after the surgical and roentgen treatment of cancer of the breast (Table 3). The age of these 10 women ranged between 38 and 65 years. Six patients had a left mastectomy, three a right mastectomy, and one a bilateral mastectomy. The pathologic lesion was cancer in nine cases and lymphoma in one (Case 3). In one patient (Case 7) hypothyroidism developed 18 months after radioiodine had been given for recurrent hyperthyroidism and 6 months after radiation for breast malignancy. In another patient (Case 6) the radiation dose was unknown; hypothyroidism developed 27 months after radiation. In case 7 only 800 r was administered, hypothyroidism occurring in this patient nine years later. This latent period before the onset of thyroid deficiency could cast doubt on the relationship of roentgen therapy to the onset of hypothyroidism were it not for the experience in patients receiving radioiodine for hyperthyroidism. In the early observed patients, hypothyroidism became rather marked before the diagnosis was suspected but more recently, because of suspicion, this condition is being diagnosed much earlier. In all cases the diagnosis was established by the finding of an elevated plasma cholesterol value, reduced protein-bound iodine, or both, and in all cases clinical improvement resulted from the administration of daily doses of 30 to 120 mg of desiccated thyroid.

The roentgen dosage administered to these 10 patients varied from 800 to 6000 r—in 7 cases between 4800 and 6000 r. In addition to the usual portal of treatment for breast cancer, six patients (Cases 1, 2, 3, 5, 7 and 9) received radiation to the supraclavicular area which would include the region of the thyroid. In Case 4 the treatment field included the upper mediastinal area and this, too, could have included the thyroid. Hypothyroidism developed in nine patients in from 6 to 49 months, an average of 18.4 months, and in one patient (Case 8) nine years after x-ray treatment. In two patients (Cases 1 and 5) the thyroid was enlarged and had the appearance of thyroiditis. In one of these 10 patients was there previous knowledge of thyroid disease.

Table 3  
Carcinoma of the Breast

Case	Age and Sex	Operation and Pathologic Diagnosis	Roentgen Treatment, Dose and Area	Hypothyroidism		
				Onset	Laboratory Confirmation	Treatment Desiccated Thyroid
1	55F	Left radical mastectomy; carcinoma simplex	5000 r to chest wall, mammary chain, left supraclavicular, left	7 months	PBI 2. 7; chol. 476	120 mg
2	49F	Left mastectomy; carcinoma simplex	5000 r to chest wall, left supraclavicular, left infraclavicular, left cervical	6 months	Chol. 560	120 mg
3	38F	Bilateral mastectomy; lymphoma	4800 r to chest wall, supraclavicular, left cervical	14 months	PBI 2.2; chol. 300	120 mg
4	51F	Left mastectomy; adenocarcinoma	5000 r to chest wall, upper mediastinal, left axilla, bilateral infraclavicular	18 months	PBI 2. 0; chol. 370	60 mg
5	50F	Right mastectomy; carcinoma	5000 r to anterior and lateral chest wall, right axilla, right supraclavicular, left cervical	30 months	PBI 2. 3; chol. 248	60 mg
6	58F	Right radical mastectomy;	Unknown	27 months	PBI 0. 84; BMR -22% BEI 3.4	120 mg
7	66F	Right mastectomy; carcinoma simplex	5000 r* to anterior chest wall, right axilla, right supraclavicular, low thyroid area	6 months	PBI 2.8; chol. 368	30 mg
8	40F	Left mastectomy, preinvasive carcinoma	800 r to left breast area	9 years	Chol. 288	45 mg
9	58F	Left radical mastectomy; carcinoma simplex	6000 r to left anterior chest, left axilla, supraclavicular, bilateral cervical	9 months	PBI 3.1	120 mg
10	65F	Left radical mastectomy; carcinoma simplex	3000 r	49 months	Chol. 343	30 mg

\* Radioiodine for hyperthyroidism 18 months before x-ray.



*Cancer of the Thyroid.* Of this group, 41 patients had thyroidectomy for thyroid cancer and subsequent high voltage radiation in whom hypothyroidism developed. Thirteen were men. The age range was from 12 to 69 years; 3 in the first two decades, 5 in the third, 13 in the fourth, 5 in the fifth, 6 in the sixth, 4 in the seventh, and 2 in the eighth decade. The type of surgical procedure varied from bilateral total thyroidectomy to total hemithyroidectomy, subtotal thyroidectomy to hemithyroidectomy and radical hemithyroidectomy, and combinations of the latter two procedures. The type of malignancy encountered included: papillary, 14 cases; follicular, 10 cases; carcinoma simplex, 7 cases; mixed papillary and follicular, 4 cases; Hurthle cell, 3 cases; small cell, 2 cases, and lymphosarcoma, 1 case. Three patients were reported to have chronic thyroiditis associated with the malignancy.

The amount of radiation delivered to the neck in 31 patients in this group with thyroid cancer was 4500 to 5000 r. In six cases the radiation dose was unknown, in two cases 3000 r, in one case 1000 r, and in one case 8100 r. The interval between the onset of hypothyroidism and the time treatment was started in individual cases was extremely wide. In seven patients, hypothyroidism was evident by the end of the third month with an equal distribution up to the 24th month. Single instances of the development of hypothyroidism are evident at the 36th, 51st, 54th, 58th and 93rd months. In one case 10 years elapsed before the onset of hypothyroidism. This patient was seen during the 10-year period; not until the 10th year did hypothyroidism develop, and even then it was only evident chemically since he had always been asymptomatic. The cholesterol and protein-bound iodine were diagnostic of hypothyroidism and returned to within normal limits after treatment with 120 mg of desiccated thyroid. On withdrawal of treatment, the protein-bound iodine level decreased and the cholesterol value increased, confirming the diagnosis of hypothyroidism.

Two of the three patients having cancer and thyroiditis became hypothyroid at the second month and the third at the seventh month. These two were among the seven who became hypothyroid during the first three months after treatment and it is conceivable that the onset of hypothyroidism was related to the surgical procedure and not to the roentgen treatment. Only one of these seven patients underwent a total thyroidectomy; the remaining had either a subtotal thyroidectomy or subtotal hemithyroidectomy with radical hemithyroidectomy on the opposite side.

## Discussion

The incidence of hypothyroidism resulting from the effect of external radiation is not known. Since we have observed only 10 cases of hypothyroidism after radiation for breast malignancy, this would indicate that the incidence must be very low. This possibility must not be overlooked, however, since the insidious development of hypothyroidism might well be mistaken for advancing malignant disease with a hopeless prognosis when actually a treatable condition exists. Therefore, it is advisable that thyroid function studies be made of all patients with breast cancer who have received widespread roentgen therapy, since they are candidates for hypothyroidism. Thyroid function studies should be a part of the routine checkup of these patients. Since the 10 cases reported here were discovered in the past three years, it is possible that some might well have been overlooked—particularly in those patients who died from breast cancer.

Currently, in malignant disease of the thyroid, the development of hypothyroidism subsequent to thyroid operation and roentgen therapy is not a problem because it is almost a routine procedure to administer thyroid for its possible suppressive effect on the remaining cancer cells. Since we earlier did observe 41 patients with hypothyroidism in the group with thyroid cancer who had received roentgen therapy after operation, it would appear that this condition is not unusual and that it must be looked for in follow-up studies if supplementary thyroid is not being taken.

Of much interest in the groups with cancer of the breast and thyroid was the delay in the development of hypothyroidism. In those with cancer of the breast, hypothyroidism did not develop until six months after roentgen treatment and then it occurred at wide intervals up to nine years later. Thus, it is reasonable to conclude that the patients with cancer of the thyroid who developed hypothyroidism during the first six months after surgery and radiation (12 cases) did so because of surgery and not from the radiation received. Following this, the development of hypothyroidism occurred at intervals as late as it did in those receiving radiation for breast cancer.

The late development of hypothyroidism in both groups (breast and thyroid cancer) is comparable. We have now observed hypothyroidism to occur as late as eight years after the administration of radioiodine.

## Summary

The observations pointed out emphasize the need for follow-up studies of all patients receiving radiation which could involve the thyroid or contiguous areas since the thyroid gland has proved to be one endocrine organ which is sensitive to high voltage radiation. Hypothyroidism must be added to the list of possible complications of radiation therapy.

## Acknowledgment

The authors wish to acknowledge the assistance of Dr. Magnus I. Smedal of the Department of Radiotherapy, Lahey Clinic Foundation, who alerted us to the possible problem of hypothyroidism in patients having ionizing radiation for breast cancer.

(The references may be seen in the original article.)

## SACRO-ILIITIS AND ULCERATIVE COLITIS\*

V. Wright† MD, MRCP and G. Watkinson‡ MD, FRCP. *British Medical Journal* 2: 675-680, 18 September 1965.

A relation between ankylosing spondylitis and bowel complaints has been postulated by several authorities. In a number of series of patients with ulcerative colitis an increased incidence of ankylosing spondylitis has been noted (Table I) and in the extensive series of 555 patients from the Lahey Clinic at Boston 28 were found to have ankylosing spondylitis (Fernandez-Herlihy, 1959). Conversely, in a number of series of patients with ankylosing spondylitis the incidence of ulcerative colitis has been variously reported as 1.5% to 3.9% (Table II). Although the frequency of ulcerative colitis in the general population is unknown, this frequency seems higher than its occurrence in hospital admis-

sions, estimated by Spriggs (1934) at 5 in 1,000 and by Melrose (1955) at 10.9 in 10,000. Melrose suggested it occurred less often in northern towns.

Court Brown and Doll (personal communication, 1958) studied a population of 13,352 spondylitics who had received x-ray therapy between 1935 and 1954. They calculated on the basis of certified deaths from colitis between 1950 and 1953 that the expected numbers of deaths from ulcerative colitis in this population would be 0.65. However, at the time of inquiry 13 certified deaths from colitis had occurred—that is, 20 times more than had been previously predicted. They were unable to advance an estimate for the morbidity from the ulcerative colitis in the same period. Such a vast and careful survey must carry considerable weight, and there would seem to be a definite relation between deaths from colitis and spondylitis.

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Table I. Incidence of Ankylosing Spondylitis in Ulcerative Colitis (Various Authors)

Place	Date	Total with Colitis	% with Spondylitis	Authors
New York	1956	148	1.3	Flood et al.
Vancouver	1959	371	1.1	Ford and Vallis
Leeds	1959	108	2.8	Wright and Watkinson
Boston	1959	555	5.0	Fernandez-Herlihy
Bethesda	1960	100	6.0	Zvaifler and Martel
Washington, D. C.	1960	1,175	2.0	Acheson
U.S.A.	1962	1,200	1.6	McEwen et al.
New York	1963	333	2.7	Rotstein et al.
Glasgow	1963	170	2.9	McBride et al.
Leeds	1965	234	6.4	Wright and Watkinson

In a previous study of the arthritis of ulcerative colitis we reported three patients who had ankylosing spondylitis among 108 with colitis (Wright and Watkinson, 1959). Bywaters and Ansell (1958) included six patients with sacro-iliac joint involvement in their 37 patients with colitic arthritis, being unable to distinguish radiologically sacro-iliac arthritis in colitic arthritis and in ankylosing spondylitis. In none of the previously reported studies had an attempt been made to investigate the true incidence of arthritis by taking radiographs of all patients with ulcerative colitis, with particular reference to the sacro-iliac joints and lumbar spine, and in none had the frequency of sacro-iliitis in a matched control group of patients unaffected with colitis been studied. We have therefore conducted a prospective study in which 234 patients with ulcerative colitis have been assessed simultaneously by both a gastroenterologist and a rheumatologist. The x-ray films of the sacro-iliac joints and lumbar spine have been taken routinely and compared with a control series of films from subjects without colitis, matched by age and sex. It has been demonstrated that in patients with ulcerative colitis there is a considerably increased incidence of sacro-iliitis, which may not be manifest clinically; its characteristics have been defined and its relation to various aspects of the associated ulcerative colitis have been carefully analysed.

#### Material and Methods

Of 269 unselected patients with ulcerative colitis reported in the preceding paper (Wright and Watkinson, 1965), radiographs of the sacro-iliac joints (antero-posterior view) and lumbar spine (antero-posterior and lateral views) were taken in 234 patients. In some instances oblique views of the sacro-iliac joints were also obtained. The patients were interviewed and examined on the same day by both of us. One (G.W.) concerned himself with the assessment of the clinical type, extent, and course

of the patient's colitis, while the other (V.W.) examined all patients with regard to the occurrence and nature of rheumatic complaints. The clinical type and extent of the colitis was assessed by methods described elsewhere (Wright and Watkinson, 1965), and a modification of the classification employed by Bockus et al. (1956) was used. We obtained 234 control films from subjects without ulcerative colitis who were matched by age and sex with the patients in the series: 136 films obtained from the general population surveys in the Leigh and Wensleydale districts were read by courtesy of Dr. J. Lawrence; the remainder were obtained from intravenous pyelogram and cystogram studies by courtesy of Dr. C. N. Pulvertaft, of York.

The films were read without knowledge of the clinical findings in the patients, and graded for sclerosis, erosion, and ankylosis on the scale: 0 = no change, 1 = doubtful, 2 = mild, 3 = moderate, 4 = severe. An overall grading for sacro-iliitis was then made with the categories: 0 = no change, 1 = mild, 2 = moderate, 3 = severe. In the lumbar spine, particular attention was paid to ligamentous calcification, disk degeneration, osteophytosis, and deformity.

#### General Review of Results

The overall incidence of sacro-iliitis in the colitic and control populations is shown in Table III. It will be seen that the incidence of mild sacro-iliitis was similar in the two groups.

For the purpose of this study, therefore, we have grouped together moderate and severe grades in analysis. The incidence in the control group of films supplied by Dr. J. Lawrence corresponded with the incidence obtained by him, reading the films independently (Lawrence, personal communication, 1965). It will be seen that the incidence of severe

Table II. Incidence of Ulcerative Colitis in Ankylosing Spondylitis (Various Authors)

Place	Date	Total with Spondylitis	% with Colitis	Authors
Stockholm	1953	117	2.6	Romanus
London	1957	399	1.5	Steinberg and Storey
" "	1958	211	1.9	Wilkinson and Bywaters
Edinburgh	1963	870	1.8	McBride et al.
Montpellier	1964	103	3.9	Serre and Simon



Table III. Incidence of Sacro-iliitis, Classified by Severity, in 234 Patients With Ulcerative Colitis and in the Same Number of Control Subjects.  
The Difference is Highly Significant

Patients	Sacro-iliitis				Total
	Absent	Mild	Moderate	Severe	
Colitis	150(64.1%)	42(17.9%)	30(12.8%)	12(5.1%)	234
Control	188(80.3%)	35(14.9%)	10( 4.3%)	1(0.4%)	234
Total	338	77	40	13	468

sacro-iliitis was 12 times greater in patients with ulcerative colitis than in the control population (5.1% to 0.4%), and moderate sacro-iliitis was three times as common (12.8% to 4.3%). In the moderate and severe categories together, 18% of patients with ulcerative colitis showed sacro-iliitis, compared with 4.7% of those without colitis. The difference is highly significant ( $P < 0.001$ ).

There was little difference in the sex incidence of sacro-iliitis in patients with ulcerative colitis; 10% of the males and 14.8% of the females had moderate sacro-iliitis, and severe sacro-iliitis was equally common in the sexes (5%). The individual features, sclerosis, erosion, and ankylosis, related to the sex of the patients, are shown in Table IV.

Table IV. Incidence of Sacro-iliac Joint Changes in 234 Patients with Ulcerative Colitis

	Male	Female	Total
No. of patients	99	135	234
Sclerosis	9(9%)	10(7.4%)	19
Erosion	6(6%)	20(14.8%)	26
Ankylosis	5(5%)	6(4.4%)	11

There was no significant difference between the sexes so far as sclerosis and ankylosis were concerned—9% compared with 7.4%, and 5% compared with 4.4%. The overall incidence of these two features was 8.1% and 4.7% respectively. Erosion, however, was more than twice as common in women (14.8%) as in men (6.1%). Of the 42 patients with ulcerative colitis who had sacro-iliitis, 11 had unilateral disease and in 31 it was bilateral.

Despite the high incidence of sacro-iliitis radiographically, only nine patients had typical ankylosing spondylitis which was apparent clinically. Ligamentous calcification was seen in the radiographs of four patients (three men and one woman). Marked narrowing of the lumbar-disk spaces was present radiographically in nine men and nine women and osteophytosis in 27 men and 32 women.

These findings were more common with advancing age.

In contrast to the findings with disk degeneration and osteophytosis of the lumbar spine, sacro-iliitis bore no apparent relation to the age of the patient. Sacro-iliitis developed in five patients below the age of 25 years.

#### Relation of Sacro-iliitis to Colitis

Sacro-iliitis was least common in patients with proctocolitis, only 8 of 68 (11.8%) such patients showing radiological changes. There was no significant difference in the incidence of sacro-iliitis in patients with acute fulminating disease and in those with a chronic course—4 (25%) of 16 patients with acute fulminating disease and 29 (21%) of 140 patients with chronic ulcerative colitis showed sacro-iliitis. When individual features of sacro-iliac disease were analysed (Table V), it was apparent that erosion was equally common in all types of ulcerative colitis and that it was sclerosis and ankylosis which were least frequently seen in patients with proctocolitis. Of 118 patients with colitis of less than four years' duration 14.4% showed sacro-iliac joint disease, whereas of 116 with ulcerative colitis exceeding four years' duration 22.0% had sacro-iliitis. When individual features of the sacro-iliac joint disease were analysed none appeared to be associated with more long-standing bowel disease.

Table V. Sacro-iliac Joint Changes Related to the Clinical Type of Colitis

	Acute	Chronic	Proctocolitis
Total	16	140	68
Sacro-iliitis	4 (25%)	29 (21%)	8 (12%)
Sclerosis	2 (12%)	13 (9%)	4 (6%)
Erosion	2 (12%)	14 (10%)	8 (12%)
Ankylosis	1 (6%)	9 (6%)	1 (1.5%)

10 Patients with segmental colitis have not been included in this analysis.

There was some suggestion that sacro-iliitis was related to the extent of the colitis, since sacro-iliitis was more common in more extensive disease, although the differences were not great. The incidence of sacro-iliitis in those with the entire colon involved was 23.2%, in those with the distal colon involved 16.7%, and in those with only the rectum involved 13.0%. It was of interest that ankylosis of the sacro-iliac joints was similar in patients with entire and distal involvement of the colon (5.8% and 7.1% respectively) but absent in those with rectal involvement only.

Twenty-six patients had been treated surgically by means of total colectomy and ileostomy. Five (19%) of these had sacro-iliitis compared with 37 (13%) of the 208 patients who had received medical treatment only. A follow-up study of 151 patients treated surgically, whose clinical features are reported separately (Watts, de Dombal, Watkinson, and Goligher, 1965), revealed that the only patient

with rheumatic symptoms after surgery attributable to active joint disease was a woman aged 21 with marked sacro-iliitis. She had episodes of pain in the back and hips accompanied by recurrent iritis.

#### Association of Sacro-iliitis with Local and Systemic Complications

There was no relation between sacro-iliitis and local complications of ulcerative colitis, such as perianal disease or the presence of pseudopolypi. The incidence of sacro-iliitis in patients with perianal disease was 11.1% compared with 19.2% in those without perianal disease. The figures for pseudopolypi were similar—11.7% of those with pseudopolypi had sacro-iliitis compared with 20.0% of those without pseudopolypi.

The incidence of sacro-iliitis related to systemic complications is shown in Tables VI and VII. There was no relation between ulcers of the buccal

Table VI. Relation of Sacro-iliitis to Systemic Complications of Colitis

Systemic Complications	Oral Ulcers		Uveitis		Skin Lesions	
	With	Without	With	Without	With	Without
No. with sacro-iliitis	8 (21.1)	34 (17.3)	6 (26)	32 (15.3)	6 (60)	36 (16.1)
No. with colitis	38	196	23	211	10	224
Statistical comparison	t = 0.54 n = 234 P < 0.6		t = 1.27 n = 234 P < 0.3		t = 3.65 n = 234 P < 0.01	

mucosa or between uveitis and sacro-iliitis. There was, however, a significant association between skin lesions and sacro-iliitis, and between colitic arthritis and sacro-iliitis. There was no sex difference in these associations, with the striking exception of colitic arthritis and sacro-iliitis.

#### Association of Sacro-iliitis with Rheumatic Complaints

There was a very definite association between colic arthritis and sacro-iliitis in women. Over three times as many women with colitic arthritis had

Table VII. Relation of Sacro-iliitis to Colitic Arthritis in Both Sexes

Colitic arthritis:	Male		Female		Total	
	With	Without	With	Without	With	Without
No. with sacro-iliitis	2 (15.6)	13 (15.1)	8 (50)	19 (16)	10 (34.5)	32 (15.6)
No. with colitis	13	86	16	119	29	205
Statistical comparison	t = 0.028 n = 99 P < 0.9		t = 3.19 n = 135 P < 0.01		t = 2.50 n = 234 P < 0.02	

Percentage frequency in parentheses.

sacro-iliitis compared with women without colitic arthritis (Table VII). However, the incidence was almost the same in men with and without colitic arthritis. There was no correlation in either sex between sacro-iliitis and other rheumatic complaints such as rheumatic fever, gout, osteo-arthritis, and muscular rheumatism. The overall incidence of sacro-iliitis in patients with these rheumatic diseases was 14.8% compared with 19.1% in those without such rheumatic complaints.

There was a correlation between patients with low back pain and those with sacro-iliitis: 28.2% of patients with low back pain had sacro-iliitis compared with 12.8% of those without low back pain (a significant difference;  $n = 234$ ,  $t = 2.9$ ,  $P < 0.01$ ). In both sexes there were just over twice as many patients with low back pain who had sacro-iliitis compared with those who had no such pain.

#### Ankylosing Spondylitis

Nine patients with ankylosing spondylitis were diagnosed clinically. Four other men with ulcerative colitis and ankylosing spondylitis were referred especially and have not been included in the overall survey. Of these 13 patients eight were men and five were women. In five spondylitic symptoms appeared after the onset of colitis (two and a half to eight years), in five spondylitic symptoms definitely preceded bowel disturbance (2 to 13 years), and in three there appeared to be a synchronous onset of symptoms from the back and colon. The difficulty of attaching significance to this is illustrated by one man who was admitted to hospital with an attack of acute fulminating colitis of seven weeks' duration. He was adamant that back symptoms dated from the onset of colitis. Radiographically the sacro-iliac joints were seen to be completely fused. It is difficult to believe that this could have occurred in a period as short as seven weeks.

Two patients had acute fulminating disease, in nine it had pursued a chronic course, and two had proctocolitis. Complications were frequent, especially uveitis (5) and arthritis (5) systemically, and pseudopolypi (5) locally. Ulcers of the buccal mucosa were present in two patients, skin lesions in four, and perianal disease in three.

After examination of the radiographs a review of the clinical findings in the back showed features consistent with ankylosing spondylitis in a further six patients (three men and three women). In four there was a synchronous onset of symptoms in the

bowel and back, and in the other two symptoms in the spine appeared four and eight years respectively after the onset of colitis. In five patients the colitis pursued a chronic course and one had proctocolitis: pseudopolypi were present in two, perianal disease in one, ulcers of the buccal mucosa in two, and skin lesions in one.

Ligamentous calcification was seen in four patients of the series (three men and one woman), and in three of the four men especially referred. The florid picture of ankylosing spondylitis with fusion of sacro-iliac joints and calcification of intervertebral ligaments was therefore seen much more commonly in men, contrasting with the overall group in whom only slightly more men were affected. In 27 other patients sacro-iliitis was present radiographically without clinical evidence of ankylosing spondylitis.

#### Discussion

A review of the literature leaves little doubt that there is an increased incidence of ankylosing spondylitis in patients with ulcerative colitis compared with the figures available for the general population—1 in 2,000 (West, 1949). The present study confirms this. Moderate sacro-iliitis was three times as common in patients with ulcerative colitis as it was in a matched control population, and severe sacro-iliitis twelve times as common. In none of the studies reviewed, however, were special views of the sacro-iliac joints taken, assessment being made usually from barium-enema examinations; the studies were not prospective in design, and no control population was studied.

Some studies have been highly selected—for example, the extensive epidemiological study of Acheson (1960), in which data were available from men only. The methods of other authors have resulted in figures based upon florid cases of ankylosing spondylitis. This may be fallacious, since our data show that although there were only 15 patients with ankylosing spondylitis recognizable clinically 42 had sacro-iliitis on radiographic examination. This may account for the difference in sex incidence between our figures and those of other workers. Others have found more men than women with ankylosing spondylitis in patients with ulcerative colitis (McEwan et al., 1962; Rotstein et al., 1963; Fernandez-Herlihy, 1959). This is in keeping with the known preponderance of men with ankylosing spondylitis (Sharp and Easson, 1954; Hart, 1955). In our study there was a slight preponderance of men with clinical ankylosing spondylitis, and those with severe



spinal involvement were all men except one, but the sex incidence of radiographic sacro-iliitis was virtually equal. When individual features of sacro-iliac joint changes were analysed, erosions were found twice as commonly in women. It is interesting to notice that extended observations of Court Brown and Doll (1957) showed that in their series of spondylitics twice as many women as men were certified as having died of ulcerative colitis.

#### Relation of Sacro-iliitis and Intestinal Disease

There is evidence that ankylosing spondylitis may be present more frequently in a number of diseases of the bowel. An association with regional ileitis has been noted. Acheson (1960), for example, found 22 patients with sacro-iliac changes (3% of a series of 733 men with regional ileitis). Steinberg and Storey (1957) described two cases. Ansell and Wigley (1964) found that 5 out of 92 patients with regional ileitis had ankylosing spondylitis and radiographic sacro-iliitis was present in 18. Ford and Vallis (1959) found a clinical association of regional ileitis and sacro-iliitis in two patients. The incidence (19.6%) found by Ansell and Wigley (1964) in patients with regional ileitis was very similar to the incidence of 18% in this study of patients with ulcerative colitis.

Dysentery is well known to produce such an association and gives a picture similar to Reiter's syndrome (Marche, 1950). Although examples of Reiter's syndrome presenting in this way are uncommon in English literature it accords with the experience of Paronen (1948) in Scandinavia. It has been suggested on these grounds that the common link between the diseases is that there is a direct spread of an infecting agent by the venous plexus to the spine (Steinberg and Storey, 1957). These authors cite brucellosis as another disease producing a similar picture. It should be noted, however, that the lesions in brucellosis are not the same as those produced in the other intestinal diseases. They are the result of a low-grade osteomyelitis in which hypertrophied bone is well marked so that adjoining vertebrae become invested in hypertrophic bone. The fact that spondylitis may precede the ulcerative colitis by many years is against the hypothesis of a direct spread of infection. The experience of Steinberg and Storey (1957) that colitis always antedates the spondylitis differs from that of most other workers. Eyler and Doub (1956) found sacro-iliitis in two out of four patients with intestinal lipodystrophy (Whipple's disease). In a recent re-

view of 95 patients with Whipple's disease 18 (all of whom were male and had peripheral joint involvement) showed spinal involvement with radiographic changes of the sacro-iliac joints, compatible with ankylosing spondylitis in several instances (Kelly and Weisiger, 1963).

There was no striking relation between any aspects of the bowel disease and the incidence of sacro-iliitis, although there was a suggestion that sacro-iliitis was commoner in more long-standing and extensive colitis. Local complications were all evenly distributed among patients with and without sacro-iliitis. This accords with the experience of Zvaifler and Martel (1960).

Wilske and Decker (1965) have reviewed the hypothesis of immune mechanisms and of infection as a cause of the arthritic changes in intestinal diseases. They regard both as speculative, with a little more evidence for the infective theory. Our data do not support the suggestion of direct infection as a cause. It is possible that both infection and immune responses may play a part, in the same way that rheumatic fever is thought to be an immune response to beta-haemolytic streptococci. We have raised this possibility before in relation to colitic arthritis (Wright and Watkinson, 1959), but the occurrence of spondylitis before the onset of colitis suggests that with this association the primary source of infection is unlikely to be in the bowel.

#### Nature of Sacro-iliitis

It has been suggested that colitic arthritis is a manifestation of ankylosing spondylitis to which these patients are prone (Rotstein et al., 1963). It is true that we have found a significant association of sacro-iliitis with colitic arthritis. No such correlation was found with other rheumatic complaints apart from the symptom of low back pain, and this symptom in a patient with ulcerative colitis must always raise the suspicion of sacro-iliitis even though signs of spondylitis are absent. On the other hand, our experience has been that colitic arthritis never precedes bowel symptoms, whereas ankylosing spondylitis may. Zvaifler and Martel (1960) had a patient in whom spondylitis antedated the colitis by 15 to 20 years. Serre and Simon (1964) reviewed 99 cases in the literature with four of their own and noted that in 24 cases the spondylitis came first. Moreover, colitic arthritis differs from the arthritis associated with ankylosing spondylitis, as it is a transient synovitis the activity of which closely parallels that of bowel disease, and there is a significant association with bowel complications such as

perianal disease and pseudopolypi, an association not found with sacro-iliitis. Furthermore, ileostomy and colectomy have differing effects in colitic arthritis and in ankylosing spondylitis found in patients with ulcerative colitis.

In our series colitic arthritis did not occur or recur after surgery, and a review of 151 patients treated surgically revealed no recurrence of colitic arthritis. At the Lahey Clinic (Fernandez-Herlihy, 1959) 15 spondylitic patients underwent colectomy and ileostomy, and progressive symptoms referable to the spondylitis continued post-operatively in 12. Only one patient in our series had persistent rheumatic complaints after surgery, and she was a girl who had sacro-iliitis. Earlier in the course of her disease, before operation, she had suffered attacks of typical colitic arthritis, but was emphatic that her postoperative symptoms differed from the attacks of colitic arthritis, and on examination they appeared to be related to sacro-iliitis.

One possible explanation of the difference in sex incidence of the frank clinical spondylitis and radiographic sacro-iliitis is that there are two disease processes—ankylosing spondylitis with spinal involvement occurring more often in men as uncomplicated ankylosing spondylitis does, and erosive changes of the sacro-iliac joints of different origin occurring more commonly in women. It could be that erosive changes confined to sacro-iliac joints without spondylitis occur only after the onset of ulcerative colitis. However, one is reluctant to postulate two entities affecting the same joints, particularly as there seems to be a significant correlation between ankylosing spondylitis preceding bowel symptoms and ulcerative colitis. The age distribu-

tion at which the changes were found lends no support to the view that the sacro-iliitis differed from that found in ankylosing spondylitis. Sacro-iliitis was equally common in younger patients, in contrast to lumbar disk changes, which were more frequently seen in older patients.

### Summary

A prospective survey into the frequency of sacro-iliitis and changes in the lumbar spine in 234 unselected patients with ulcerative colitis has been carried out. Combined assessment by a gastroenterologist and a rheumatologist made it possible to correlate the radiological changes with colitic and arthritic symptoms and signs. The x-ray changes in the sacro-iliac joints were compared with a matched control population.

Fifteen patients had ankylosing spondylitis clinically. Forty-two (18%) had sacro-iliitis radiographically, a highly significant increase in incidence compared with the control population. Sacro-iliitis was present equally commonly in both sexes, but erosive changes occurred twice as often among women. The incidence of sacro-iliitis bore no striking relation to the colonic disease in its duration, extent, clinical type, or complications, unlike colitic arthritis. It was not related to uveitis, nor to ulceration of the buccal mucosa. There was a positive correlation with skin lesions and colitic arthritis. The significance of these findings in relation to other forms of arthritis occurring with diseases of the bowel is discussed, and the suggestion that colitic arthritis is a manifestation of ankylosing spondylitis is examined.

## FROM THE NOTE BOOK

### DRUG ABUSE CONTROL ACT OF 1965

(Public Law 89-74 89th Congress, HR 2,  
July 15, 1965)

The Act is to protect the public health and safety by establishing special controls for depressant, stimulating, and counterfeit drugs, and for other purposes, while "not under the supervision of a licensed practitioner." The Act limits the expiration date (6 months) and the number of refills on prescriptions for these drugs (5 refills) and requires those who sell these drugs to keep records of purchases and dispersals.

The effective date of the Law is 1 February 1966, but on an interim basis until 1 August 1966 drugs containing amphetamines and barbiturates in combination with other drugs, except in combination with each other, are exempt. The Law states "no separate records, nor set forms or forms for any of the foregoing records, shall be required as long as records containing the information are available". Since a prescription is required for all drugs covered by this Law, the separate filing of these prescriptions constitutes the required record-keeping.

It is the policy of the Navy Medical Department

to cooperate as closely as possible with other Government agencies in the accomplishment of their missions. For registration and for periodic inventory at other than presently ordered times, however, the Department of Defense is not a person as defined in Section 511 (d) of subject Law. Except for action required in paragraph 3 above, Chapter 21 of the Manual of the Medical Department is considered adequate instruction for complying with the above stated Law and for furnishing detailed information when required by the Food and Drug Administration. (Ref: BUMED Notice 6710 dated 28 Jan 1966.)

### SPLINTS FOR TRANSPORTING PATIENTS WITH FRACTURES

Recently available is Chapter III of the Handbook of the Hospital Corps on "First Aid and Emergency Procedures" (Federal Supply No. 0510-020-3000). In this Chapter there is described and illustrated the multiple purpose Splint, wrap around, leg, arm, back and neck, canvas, FSN 6515-680-0887. This splint was designed for field use and is easy to apply.

Since Chapter III was prepared two other splints have been accepted as standard items and should be ready for delivery after 1 March 1966. These are plastic splints which can be rapidly applied and blown up with exhaled air to furnish relative stability of the injured extremity. One is a long arm splint which will serve for fractures below the midshaft of the humerus and is entitled Splint, arm, pneumatic, adult (6515-903-8169). The other plastic splint is for the lower extremity and similarly is easy to apply. It is entitled Splint, leg, wrap-around, pneumatic, plastic, adult (6515-904-0116).

Attention to these items is invited because patients are still transported from the scene of injury to a medical facility with inadequate splinting or with no splinting. This is a most condemnable practice. Other methods of splinting with materials at hand are possible. These stock splints are much more convenient.

It should be pointed out that nothing surpasses the conventional Thomas Splint for immobilizing fractures of the femur, if properly applied. The canvas multipurpose splint is second best for femoral fractures. The plastic air splints for the leg are not adequate for use on femoral shaft fractures, since they do not also immobilize the hip joint. This is not to detract from the use of the air splint for fractures below the femoral shaft.

Fractures of the humeral shaft or shoulder joint can often be best immobilized by the use of a triangular bandage with an ace bandage wrapping the arm and forearm against the chest (the so-called "sling and swathe" method). The plastic air splint for the arm is otherwise very useful in fractures below the humeral shaft.

A valid objection to the plastic splint for field use is that the plastic can be punctured by sharp rocks or underbrush. However, the packaging of the air splints permits easy stowage and ready use.—Submitted by CAPT R. H. Brown MC USN, Chief of Orthopedics, USNH, Bethesda, Md.

### STUDY OF AUTOMOBILE DRIVERS

A study of a group of automobile drivers shows that nearly all of them broke at least one traffic law in five minutes of driving. Many drivers committed more than 10 violations in that period. The most common violation was speeding.

These findings are contained in a report by the American Institutes for Research, Silver Spring, Md., on the driving behavior of 304 men in Washington, D. C. The research was supported by the Division of Accident Prevention, Public Health Service, U. S. Department of Health, Education, and Welfare.

The project was conducted as follows: camera-men, riding in a truck, followed each driver through Washington traffic for five minutes and took motion pictures. Then the researchers studied the film in a studio. The drivers did not know they were being photographed.

"It was found that nearly all drivers committed at least one error during the five minutes, and that the average number of errors was 9.18," said the report. "Speeding was the most frequent error, noted in 87 percent of the cases."

Other violations by the group: failure to stay in lane, 63 percent of the drivers; changing lanes without caution, 20 percent; following too closely, 17 percent; turning without signaling, 46 percent; changing lanes without signaling, 80 percent; crashing a traffic light, 15 percent; improper passing, 6 percent; improper turning, 11 percent; and improper stopping (usually in pedestrian walkways), 34 percent.

The purpose of the study is to determine whether the drivers who committed the most violations in the study will have the most accidents. The researchers will find out whether this is true by checking and comparing the number of violations with the



number of accidents for each driver four years from now.

At no time during or after the study will the drivers be publicly identified.—USDHEW PHS, Jan 28, 1966.

## HEARING AIDS

### Deterioration Of Hearing

It has been suggested that the prolonged use of a powerful hearing aid may have an adverse effect on the residual hearing of the aided ear (Clin-Alert No. 3, 1962). Macrae and Farrant presented evidence clearly showing that this can occur (Clin-Alert No. 242, 1965). The present authors observed two teenage boys who experienced decreased acuity in the aided ear presumably due to use of aids having a maximum power output of 139 db. One patient had worn the aid for eight years; the other for 10 years. As a precautionary measure, both patients were given instruments for use in the previously unaided ear which incorporated an automatic volume control circuit. With such aids the maximum output can be limited to presumably safe levels.—Ross & Truex (Storrs, Conn.) Arch Otolaryngol 82: 615, December 1965.\* Clin-Alert No. 322.

## LASER

### Retinal Burns

Laser is increasingly used in industrial and scientific laboratories. Although ophthalmologists recognize the dangers, many lay persons who use the device may not be fully aware that the instrument can cause retinal burns. The authors observed retinal damage in two men who worked with an instrument having a 0.2 joule output. Both patients had small white discrete areas on the retina, similar to experimentally produced laser burns in animals. One patient had observed the beam by reflection from the mirror-like surface of a piece of glass. The area of the visual field in which the reflection had been seen corresponded to the area of the retinal lesion and the visual field loss corresponded in size and location to one of the lesions. The medico-legal aspects of this problem, especially regarding liability

under workmen's compensation laws, are obvious.—Jacobson & McLean (New York, N. Y.), Arch Ophthalmol 74: 882, December 1965.\* Clin-Alert No. 323.

## RESERPINE

### Carcinoid Syndrome

Reserpine is widely advocated for use in management of patients with severe thyrotoxicosis. The present authors gave Sandril (2.5 mg i. m. q. 6 hrs) to seven hyperthyroid patients and to four euthyroid subjects. None of the hyperthyroid patients were benefited. In fact, the majority developed a carcinoid syndrome characterized by flushing of the face and trunk, diarrhea, increased tremor, nausea, fatigue and nervousness. Three of the control subjects developed similar, but less severe, symptoms. "The usefulness of reserpine in the treatment of severe thyrotoxicosis must be seriously questioned."—Blumenthal et al (Minneapolis, Minn.) Arch Int Med 116:819, December 1965.\* Clin-Alert No. 324.

## LSD

### A Dangerous Drug

The popularity of LSD (lysergic acid diethylamide) among the lay public has grown rapidly because of the belief that it expands consciousness and alters personality for the better. As a result of indiscriminate, widespread use of the drug, there has been a sudden upsurge in the number of patients admitted to Bellevue Psychiatric Hospital because of adverse reactions. The reactions are of three types: acute panic episodes; recurrence of symptoms in a period of abstinence after multiple ingestion; and prolonged psychosis. The immediate prognosis in the first group is good. Patients in the other two groups have all shown some impairment of performance at time of last observation. LSD is a dangerous drug.—Frosch et al (New York, N. Y.) New England J Med 273:1235, December 2, 1965.\* Clin-Alert No. 325.

\* Republished by permission of Science Editors, Inc. from Clin-Alert dated December 17, 1965.

## DENTAL SECTION

### THE IMAGE OF DENTISTRY

*Jour of the Am Col of Den* 32(3): 129-272,  
July 1965.

This issue is completely devoted to a report on the January 1965 Workshop on Enhancing the Image of Dentistry. It is well worth careful study by each dentist. The workshop brought together a group of about 125 leaders of the dental profession and other persons sophisticated in the subject. The report consists of a study of what dentistry means to the public, the meaning of dentistry to the profession itself, and the ability of dentistry to serve the public. It was anticipated that this meeting of individuals of many backgrounds and tremendous breadth of experience would develop interactions, definition of problems, and mature consideration of solutions; and it was expected that this would stimulate the profession as a whole to accelerate its development and to increase its ability to assume its full responsibility. The College promoted this Workshop in its historical and traditional role of trying to assume the responsibility of presenting the most important problems that face the profession. By publishing the Workshop proceedings, the College offered to society and the profession a stimulation, an opportunity, an invitation to every dentist, and to every group in our society, to assume one or all of the defined responsibilities, to assist in the solution of some of the problems of the dental profession.

Following an orientation, seven selected panelists presented formal papers to build a framework for study. Then a series of study-groups studied the issues in the light of their special abilities, background, knowledge and experience. The study group reports were debated in a general session. All of the Workshop material was studied by the College's Committee on Social Characteristics which, on 2-3 April 1965, prepared a report which concluded with 14 recommendations. The Board of Regents of the American College of Dentists, at its meeting of 9-10 April 1965, evaluated the report, acted on its recommendations, and made plans for further implementation.

To further whet the interest of readers, an abstract of one of the formal papers follows.

### CHANGING THE DENTIST'S IMAGE OF HIS OWN PROFESSION

*Morris, A. L. J Am Col Den* 32(3): 143-156,  
July 1965.

A recognizable dissatisfaction exists regarding the image with which many dentists view their profession. Possibly, factors inherent within individual dentists, coupled with peculiarities of dentistry's culture in this complicated society, have resulted in an undeserving and undesirable image of the profession.

One of the difficulties facing the dentist today is the lack of a clear concept of his professional identity. It is doubtful that the total scope of modern dentistry, including its responsibilities, capabilities and opportunities, has been adequately communicated to the profession at large.

The student develops a negative self-image because he concludes that people in general take an unfavorable view of his services. Strong reactions to this subject have been carried into practice by many dentists. Dental school emphasis on the technical aspects of dentistry plays an important part. Mature adjustment implies achievement of a balance, an appreciation of the correct limits of human behavior, while retaining and working toward the vision of the future. One of the obligations of dental educators is to continually identify for the student the frontier of professional thought and activity. Dental schools have a strong responsibility to influence the future course of the profession.

Professional identity is a particularly challenging problem to the dental specialist. He must recognize that he has unique opportunities, and the responsibility, to exert leadership for the common good of his profession. Responsibility rests squarely with the specialists.

Among dentists, the conscious or subconscious physician complex is detrimental to the image of their profession. Dentistry is not equal to medicine, pharmacy, law, or engineering. There is no reason to compare a profession with so many unique characteristics to any other. This is as useless as comparing apples and pears. We should acknowledge with pride the accomplishments of our contemporaries, while at the same time being thankful for the

privilege of being a dentist and all that it implies.

The dentist who takes personal satisfaction in his work, and thereby adds to his self-respect, has a good self-image which he extrapolates to a good image of his profession. Failing excellence in his honored profession, no substitute can heal the self-inflicted wound to his personal dignity. Hobbies, investments, or success in a secondary field is no escape. A fundamental challenge in life is for a man to choose the ground upon which he will stand, the profession with which he will identify himself. A dentist's commitment and dedication will have a compounding effect. He will become involved with organized dentistry, and its responsibilities to society. His community efforts will add to the stature of his profession and himself.

Students merely prepared to practice dentistry as defined at the time of their graduation, are poorly prepared to accommodate and to provide leadership in the changing complexion of dental practice. The key feature to future success is a program of continuing education. The dentist who falls constantly behind has difficulty in respecting his own image as a dentist.

The dentist who regards his practice primarily as a means to make a living has lost the true meaning of his profession. Dentistry is a calling, a responsibility. His professional life will have its greatest meaning as he regards it as the opportunity and privilege of serving others—as his "Ministry of Dentistry."

#### EMERGENCY CARE AND EVALUATION OF HEAD INJURIES BY THE ORAL SURGEON

Weiss, L., BS DDS MS, *Oral Surg Oral Med & Oral Path* 20(6): 705-708, Dec 1965.

The person who receives traumatic injuries to the head is often first seen by an oral surgeon. Injuries not immediately apparent may be more important than those that are obvious. A determination of the patient's systemic condition demands consideration prior to any treatment of local injuries.

The author stresses the need of obtaining a complete case history from the patient, witnesses or ambulance attendants, as may be possible, concerning the injured person. A recording of the clinical picture is essential to diagnosis. This includes consciousness, duration of unconsciousness, vital signs, vomiting, sites of injury and hemorrhage, pupillary size, etc.

Patients with head injuries and falling blood pressure require transfusions of whole blood or hypertonic solutions to increase blood volume and reduce

tissue edema by the latter means. Careful handling is essential, and unnecessary handling is to be avoided, even to the extent of postponing the making of radiographs unless deemed urgent.

Hemorrhage from the ears is suggestive of a basal skull fracture whereas drainage of cerebrospinal fluid from the nose or ears confirms such suspicions. The recorded history in relationship to periods of consciousness and unconsciousness is important in attempting diagnosis of subdural and extradural hematomas.

Recognition of the signs and symptoms described in the article stress the need for evaluation by other specialists and a team approach to treatment, for the overall welfare of the individual.

#### PERSONNEL AND PROFESSIONAL NOTES

**DENTAL TEACHING NEEDS.** The following facts were reported by Marion W. McCrea, Editor, *J Dent Educ* in Vol 29, No. 4 following the meeting of the American Association of Dental Schools in Toronto.

Soon 150 more freshmen will be admitted to dental schools. New schools and expansion of present facilities will accommodate an additional 350 students. The dental population is on the increase.

The teaching side of the picture, however, presents a different story. It is estimated that 200 full-time vacant teaching positions exist. A survey has shown that at least 50 percent of dental school teaching staffs are part-time and that in 5 schools the percentage is 90.

In February 1964, 359 persons were being educated primarily for research activities related to dentistry and eventually will be available for teaching positions in dental schools. Half of the group were pursuing the 6 recognized basic sciences of the regular curriculum, with 54 in pathology. Only 12 were in operative dentistry and prosthodontics, both of which comprise great segments of dental practice and education. Only 2 were in diagnosis—the basis of proper therapy.

**DENTAL OFFICER PRESENTATIONS.** CAPT D. V. Castner DC USN and CDR W. R. Hiatt DC USN presented papers on "Surgical Correction of Mandibular Deformities" to the staff and guests of the Southampton Hospital located in Southampton, L. I., New York, on 11 January 1966. CAPT Castner's paper was entitled "Osteotomy of the Body of the Mandible" and CDR Hiatt's paper



was "Osteotomy of the Ascending Rami of the Mandible."

CAPT James W. Wooten DC USAF, 1st year resident in oral surgery, U.S. Naval Hospital, Great Lakes, Illinois, presented a lecture and slide demonstration entitled "White Lesions" to the dental officers at Fort Sheridan, Illinois on 18 January 1966.

**PROFESSIONAL MEETING.** The U.S. Naval Dental Clinic, Marine Corps Base, Camp Pendleton, California presented its first monthly professional and dinner meeting on 10 January 1966. CAPT E. B. Nutting DC USN (Ret), a well known clinician and lecturer, presented "Endodontics Today." More than 55 active duty, reserve, and retired officers were present from such points as Long Beach, Twenty-Nine Palms, and San Diego.

**NAVAL RESERVE DENTAL COMPANY DONATES BLOOD.** A cargo of 71 pints of blood donated by Western Reserve University Dental School students was sent on 4 January 1966 to American Red Cross Headquarters in Washington, D. C. This donation was earmarked for the United States Armed Forces serving in Viet Nam.

The student officers of Naval Reserve Dental Company 4-12, Western Reserve University School of Dentistry, Cleveland, Ohio, disturbed over the small but well publicized radical student protesting groups, sponsored a Blood Mobile Drive. Out of the small enrollment of the school, over 100 men volunteered donations, most of them for the first time.

CDR J. E. Holliday DC USNR is Commanding Officer of the Dental Company. ENS Howard E. Sperber USNR, Senior Class President, was in charge of the drive.

**DENTAL INTERN SELECTIONS.** The Chief of the Dental Division, Bureau of Medicine and Surgery, is pleased to announce the selection of dental interns for FY 1967. The 68 applicants were members of the senior classes of 27 dental schools. The 32 selectees represented 28 Ensigns 1925, one 1105 Reserve officer, and three civilian applicants, with at least one representative from each of 24 dental schools. Especially gratifying was the fact that 13 of the 32 selectees rated academically among the top ten percent of their class. This rising trend in level of academic excellence among dental interns conforms with experience of recent years, exemplified by correspondence from the teaching hospitals, as well as from dental school deans who rate the Navy dental internships among the finest.

These internships compare most favorably with the best civilian hospital internships and each year the number of applicants exceeds the number of naval dental internships available—usually by a ratio of two to one. The Navy carefully selects the most outstanding applicants, and in this selection, every possible preference is given to the Ensign, U.S. Naval Reserve.

**THREE ADDITIONAL ELECTRIC TOOTHBRUSHES RECOGNIZED.** The ADA Council on Dental Therapeutics has announced recognition of three additional electric toothbrushes as "effective cleansing devices." The three brushes are the Sunbeam Cordless Hygienic Toothbrush, the Westinghouse Multi-Action Toothbrush and the Tek Automatic Toothbrush. Two electric brushes—manufactured by General Electric Company and E. R. Squibb were previously granted recognition.

The ADA Council on Dental Therapeutics has classified all the brushes in Group B. Listing in Group B means that there is insufficient evidence to justify present acceptance, but there is reasonable evidence of the item's usefulness and safety.

The Council began evaluating electric toothbrushes in 1964 "in order to provide authoritative information to the dental professional, and general guidance and protection to the public."

**THE PROTECTIVE VALUE OF FLUORIDATION ON A PART-TIME BASIS.** According to studies conducted by the Division of Dental Health, Public Health Service, U.S. Department of Health, Education, and Welfare, elementary school children in Elk Lake, Pennsylvania and Pike County, Kentucky, who consumed fluorides added to their school water supplies, showed appreciable reductions (25 and 29 percent, respectively) in the average rate of decayed, missing and filled teeth, compared with the caries rate of children who attended the schools before school water fluoridation was instituted.

Because the children drink fluoride-deficient water at home, fluorides were added to the school water supplies in amounts greater than the optimum level recommended for community fluoridation in the area in an attempt to duplicate the total fluoride intake of children who drink optimally fluoridated water on a full-time basis.

The studies are being conducted in one school in Elk Lake and two schools in Pike County. Findings, published in the Journal of the American Dental Association are interim results after 4 and 5 years, respectively; the full potential of the procedure can-

not be determined until 1970 when the study schools populations will have had maximum continuous exposure to fluoride.

The interim data corroborate the findings from a

previous study conducted by the Division of Dental Health in the Virgin Islands, and provide further evidence of the protective value of fluoridation on a part-time basis.

## OCCUPATIONAL MEDICINE SECTION

### POST OFFICE HEALTH UNITS

*Occupational Health Service Officer Bulletin No. 4, Civil Service Commission,  
Bureau of Retirement and Insurance, Washington, D. C., Jan 12, 1966.*

The Post Office Department has announced that it is immediately prepared to share its 53 existing occupational health facilities with nearby Federal installations. The available services, which include immunizations, are those furnished Post Office employees. Installations without occupational health services in the same building or near a Post Office facility may arrange to provide such services through

the Post Office by contacting—

Assistant Postmaster General  
Bureau of Personnel  
Post Office Department  
Washington, D. C. 20260

Details on services offered, reimbursement figures and contractual arrangements will be individually arranged.

#### List of Post Office Health Units As of October 26, 1965

U. S. Post Office  
Atlanta, Ga. 30304  
U. S. Post Office  
Baltimore, Md. 21233  
U. S. Post Office  
Birmingham, Ala. 35203  
General Post Office  
Boston, Mass. 02109  
So. Postal Annex  
Boston, Mass. 02109  
Bronx Central Post Office  
Bronx, N. Y. 10451  
U. S. Post Office  
Brooklyn, N. Y. 11201  
U. S. Post Office  
Buffalo, N. Y. 14205  
Main Post Office  
Chigaco, Ill. 60607  
So. Side Facility  
Chicago, Ill. 60629  
General Post Office  
Cincinnati, Ohio 45202

Post Office Annex  
Cincinnati, Ohio 45202  
Main Post Office  
Cleveland, Ohio 44101  
U. S. Post Office  
Columbus, Ohio 43216  
Terminal Annex Bldg.  
U. S. Post Office  
Dallas, Texas 75201  
Main Post Office  
Milwaukee, Wisc. 53202  
U. S. Post Office  
Denver, Colo. 80202  
U. S. Post Office  
Des Moines, Ia. 50318  
General Post Office  
Detroit, Michigan 48233  
Main Post Office  
Ft. Worth, Texas 76101  
Main Post Office  
Houston, Texas 77002  
U. S. Post Office  
Indianapolis, Ind. 46202

General Post Office  
 Kansas City, Mo. 64108  
 U. S. Post Office  
 Louisville, Ky. 40201  
 U. S. Post Office—Terminal Annex  
 Los Angeles, Calif. 90052  
 U. S. Post Office  
 Memphis, Tenn. 38101  
 U. S. Post Office—Biscayne Annex  
 Miami, Fla. 33101  
 Main Post Office  
 Minneapolis, Minn. 55401  
 U. S. Post Office  
 Nashville, Tenn. 37202  
 U. S. Post Office  
 Newark, N. J. 07102  
 Main Post Office  
 New Orleans, La. 70112  
 General Post Office  
 New York, N. Y. 10001  
 Morgan Station Post Office  
 New York, N. Y. 10001  
 Church Street Post Office  
 New York, N. Y. 10001  
 Grand Central Post Office  
 New York, N. Y. 10001  
 Postal Concentration Center  
 Long Island City, N. Y. 11101  
 General Post Office  
 Philadelphia, Pa. 19104  
 U. S. Post Office  
 Pittsburgh, Pa. 15219  
 U. S. Post Office  
 Portland, Ore. 97208

U. S. Post Office  
 Providence, R. I. 02904  
 U. S. Post Office  
 Richmond, Va. 23219  
 Main Post Office  
 Rochester, N. Y. 14603  
 U. S. Post Office—Rincon Annex  
 San Francisco, Calif. 94101  
 U. S. Post Office, Ferry Station  
 San Francisco, Calif. 94101  
 Main Post Office  
 St. Louis, Mo. 63155  
 Main Post Office  
 St. Paul, Minn. 55101  
 Pennsylvania Ave. Station  
 St. Paul, Minn. 55101  
 U. S. Post Office—Tapley Annex  
 Springfield, Mass. 01101  
 U. S. Post Office  
 Seattle, Washington 98101  
 City Post Office  
 Washington, D. C. 20013  
 Post Office Department  
 12th & Penn. Ave. N. W.  
 Washington, D. C. 20260  
 Post Office Department  
 Mail Equipment Shops  
 5th & W. Streets, N. W.  
 Washington, D. C. 20260

General Services Administration has scheduled 18 new Occupational Health facilities. The Post Office Department plans to open 27 new facilities as space becomes available and the District of Columbia Government has proposed 10 new facilities in addition to its present 3.

Facilities soon to open, or recently opened include—

Location	Responsible Agency	Date Open
Akron, Ohio	PO	Mar 1966
Charlotte, N. Carolina	PO	Mar 1966
Chicago, Illinois	GSA	NOW OPEN
Cincinnati, Ohio	GSA	NOW OPEN
Columbus, Ohio	PO	NOW OPEN
Denver, Colorado	GSA	NOW OPEN
Grand Rapids, Michigan	PO	NOW OPEN
Hartford, Connecticut	PO	Mar 1966
Hartford, Connecticut	GSA	NOW OPEN
Jacksonville, Florida	PO	Mar 1966
Jamaica, New York	PO	NOW OPEN
Jersey City, New Jersey	PO	NOW OPEN
Oklahoma City, Oklahoma	PO	NOW OPEN
Pittsburgh, Pennsylvania	GSA	NOW OPEN
Sacramento, California	PO	Mar 1966
San Francisco, California	GSA	NOW OPEN



NOTE: Naval Activities which might find the utilization of these units to be advantageous must obtain the approval of the appropriate Bureau.

## RESINOUS COMPOUNDS CAUSE RESPIRATORY PROBLEMS

*Industrial Medicine & Surgery 34(12): 933,  
Dec 1965.*

Those sniffles a worker has may not be the result of a cold. If he is an industrial worker or if his wife has trapped him into painting the house, the sniffles may come from use of newly-developed types of resinous glues and adhesives or use of certain types of paints.

Some of these products now coming into widespread industrial and public use can contribute to respiratory problems—sometimes severe ones—for those working with them, according to Dr. John Rankin, professor of medicine at the University of Wisconsin Medical School.

Since 1962, Dr. Rankin and his co-investigator, Dr. Louis W. Chosy, instructor of medicine at the Medical School, have studied more than 300 persons from scattered Wisconsin industries who became ill after contact with the new compounds.

These resinous compounds, explained Dr. Chosy, have been developed by modern chemistry. Chemically and simply speaking, scientists developed the new compounds by adding different chemical ingredients to a basic "polymer" molecule under varying conditions. The materials are highly "reactive" only while they are first being used. After a glue dries, it is no longer reactive and therefore causes no one any trouble, Dr. Chosy said.

There are many industrial uses of the new compounds. They are used, for example, in adhesives which can bind metal to metal or effectively encase electrical circuits. But use of the new materials is sometimes less rosy on the human side. Those working with the glues often develop a burning of the eyes and a congestion of the nose and throat.

In almost every case they are studying, said Dr. Chosy, the affected person's ailments were initially diagnosed as sinus trouble, pneumonia, chronic bronchitis, or asthma—all of which may be side effects of exposure to polymer compounds. With added exposure, respiratory problems may become more severe, resulting in ear infections, sinus inflammation, or bronchial pneumonia. The full range of exposure effects is not completely understood.

The best treatment for exposure, he said, is to

keep away from the compounds. This poses a special problem for the workman whose job requires contact with the resinous materials. Complete recovery may require prolonged absence from exposure. Re-exposure, even after "recovery", starts the problem over again, often quicker than the first time.

The number affected in any given plant varies considerably depending on the worker's degree of contact with the resinous materials. Affected employees have varied roughly from one-half to 25% of total employees.

It is not only the industrial worker who may have problems, Dr. Chosy pointed out. "These polymers may be encountered by the scientist in his electronics lab, the laborer in a lumber mill, the sportsman repairing his fiber glass boat, or even the captive husband painting the house," he said.

Most persons Drs. Chosy and Rankin have studied have completely recovered, though recovery was very slow in some cases. Many of these persons were not able to return to their old jobs until production changes were made, resulting in better ventilation or use of different types of resinous materials.

There is no test to determine if an individual will be adversely affected by exposure to the compounds. What then is the answer for the industrial and home users of these products?

Largely, said Dr. Chosy, the answer is education in the dangers of indiscriminate use of these adhesive and resinous compounds, as well as urging industry to give closer attention to the potential medical problems of their workers.

Many users of the new chemical materials have become more careful, Dr. Chosy said. In some cases, industries have switched to safer compounds. In well-ventilated plants where resinous compounds are used workers usually are not affected. Poorly ventilated plants using the same materials are likely to have affected employees.

Contact with these new materials could conceivably become an increasing problem.

## NONPRESCRIPTION IPECAC

*National Clearinghouse for Poison Control  
Centers Bulletin, Page 9, Nov-Dec 1965,  
HEW PHS, Washington, D. C.*

The Food and Drug Administration announced at the American Academy of Pediatrics on October 27, 1965 in Chicago, Illinois, that Ipecac syrup would be allowed to be sold without prescription.

This was done to make Ipecac syrup readily available for first-aid use under medical supervision to induce vomiting in certain kinds of poisoning. However, the Ipecac syrup should be sold in one fluid ounce containers with appropriate labeling. Information on labeling may be obtained from the Food and Drug Administration.

### HOUSEHOLD PARATHION

*National Clearinghouse for Poison Control  
Centers Bulletin, Page 10, Nov-Dec 1965,  
HEW PHS, Washington, D. C.*

In the September-October 1965 Bulletin, there was mention of a child seriously ill from parathion that was available in the home. This had been packaged and sold in improperly labeled paper bags for household use against cockroaches. In October, a two-year old Brooklyn, New York girl died after licking parathion from her hands. The source of the parathion, as reported by the New York City Poison Control Center, was on the floor of the clothes closet in her own home. It had been placed there by her mother. The Poison Control Centers should be alerted to the fact that there appears to be an increase in illegal sales of this extremely toxic insecticide diverted from commercial use for household purposes. It might be generally predicted that the consumers using this product would be in the less affluent neighborhoods where powerful insecticides are necessary and where there may be less caution in their use.

The symptoms of parathion poisoning develop as a result of the inhibition of the enzyme cholinesterase. This causes an accumulation of acetyl choline producing muscarinic, nicotinic, and central nervous system cholinergic effects. The important symptoms include: vomiting, cramps, salivation, perspiration, wheezing, dyspnea, pulmonary edema, myosis, muscle twitching, muscle weakness (including weakness of the muscles for respiration), giddiness, ataxia, convulsions, coma, and central respiratory and cardiovascular depression.

Treatment consists of ending the exposure by inducing emesis or gastric lavage or washing the exposed skin with soap and water followed by alcohol. If the patient is cyanotic, maintain respiration with oxygen and artificial respiration. As soon as cyanosis is overcome, administer atropine sulfate (adult—2 to 4 mg. intravenously) at 5 to 10 minutes until signs of atropinization appear (dry, flushed face, tachycardia). Atropine should not be given during

cyanosis, as it may cause arrhythmias in cyanotic patients. In serious cases, where atropine does not give sufficient improvement, Protopam chloride (2-PAM, pralidoxime) should be also administered in addition to atropine. There are many case reports of dramatic relief of symptoms following the administration of Protopam, which is currently available from the Ayerst Laboratories.

### THE QUESTION CLINIC

*Jour of Occupational Medicine 8(1): 42, Jan 1966.*

#### Back Pain

Q. What laboratory tests should be done in addition to a routine physical examination and history-taking in cases where there has been persistent back pain over many months, following an injury?

A. Persistent back pain following an injury is the bane of the industrial surgeon's existence. The routine history and physical examination should be directed toward the onset of complaints, the antecedent position of the individual at the time at which the injury occurred, and his resultant position after the injury. The physical examination must include an evaluation of his posture, his muscular status, and his overt response to pain. Specifically, the motions of the first examination. Rotation of the hips with straight-leg raising, having the subject rise from the supine position to a sitting position by the use of the back muscles, and the evaluation of the deep reflexes and pain perception of the extremities is required at the initial examination—and probably should be done before the injured back is subjected to motion studies, if any suggestion of neurologic deficit is present. The laboratory tests will vary, depending upon the symptomatology and the physical findings. As a baseline procedure, I take P.A. and lateral views of the lumbosacral spine, and rotational views with additional spot films of the lumbosacral joint in the lateral projection. If an inflammatory disease is suggested by the findings, the sedimentation rate, latex fixation, and the usual routine laboratory work of blood counts and white counts will aid in the diagnosis. If neurologic deficit is present in the extremities, myelography is required. All of these steps are aimed toward deciding upon the diagnosis and the plan of therapy.

Eventually the individual is evaluated to the permanency of his disability. Here again, the history should be recorded. At this time the type of activity he has engaged in for the last several months should be recorded—particularly whether he has been ap-

proved for work, whether limitations as to the type of work he may do have been ordered, and the amount of pain experienced should all be indicated. The examination should include all of the parts of the initial examination, and again I obtain x-ray evaluation. (Progression of an arthritis may be well demonstrated in many of the follow-up x-ray evaluations at the time of the determination of permanent disability.)

#### Contact Lenses

Q. We are seriously considering barring the wearing of contact lenses by workers within our chemical plant where there is some handling of acid and alkali. Are we on good grounds in making such a rule?

A. Industrial ophthalmologists generally support the position that contact lenses should not be allowed in plants where there is exposure to acid or alkali because these substances may become trapped beneath the contact lens, prolonged the period of caustic contact and thus increasing the chemical damage to the eye.

#### WORK PERFORMANCE RATINGS OF FORMER PSYCHIATRIC PATIENTS

*Nyla J. Cole MD, Donald R. Shupe MA and Roger B. Allison PhD, Salt Lake City, Utah, JOM 8(1): 1, Jan 1966.*

It is well known to mental health professionals that the vast majority of individuals who encounter psychiatric difficulties continue to compete on the labor market, find employment, and in general turn in a steady work performance. However, although there are clinical judgments and subjective studies based on patients statements as to the adequacy of their performances, an objective "feedback" from industry evaluating this impression has not been available. In the past 5 years, as part of a larger project we have been concerned with evaluating on-the-job performance of former mental patients as rated by industrial supervisors. The present report is an intensive analysis of the work ratings of a group of 137 male former psychiatric patients: 45 schizophrenics and 92 psychoneurotics. The study compares the adequacy of their performances with the average employee performance within the industries under study and also with that of a sample of control subjects, matched for age, sex, education, and specific job description.

#### Industrial Work Rating Procedures

After considerable community exploration, the

interest and participation of some industries in the Salt Lake City area were obtained. The collaborating companies met the following criteria: As part of the routine evaluation of all personnel, an assessment of the work performance of each employee by his immediate superior was a standard yearly procedure. The caliber of the performance was measured with an objective form covering a variety of work attributes, with each item rated on a 6-point scale ranging from "failing" to "superior performance". This work performance inventory (WPI) covered such items as quantity and quality of work, initiative, and cooperativeness with supervisors and fellow employees, and yielded both subscores on various abilities and a total score.

In reviewing the work ratings achieved by all the male employees within the companies, the work rating scores appeared to vary in direct relationship to the level of job complexity. Janitorial staff, for example, generally earned lower numerical scores than individuals in technical or managerial positions. To establish some basis for evaluating the adequacy of a given score achieved within the patient sample, the vocational positions for all male employees within the participating firms were ranked according to their level of complexity, following the 7-point classification system devised by Hollingshead. The means and standard deviations of the total WPI scores were then calculated for each job category.

For the companies as a whole, the average work rating rose in direct relationship to vocational status: the higher the job level, the higher the mean score. At the same time, some decrease in the standard deviations (S. D.) occurred for the more highly skilled categories.

To establish a basis for evaluating a given score achieved within the study sample, these means and standard deviations were utilized as the standard for comparing subjects' and controls' employment adequacy. The work ratings of the former psychiatric patients and their matched controls were rescored on the basis of the deviation from the mean of their vocational levels, thus allowing comparisons to be made which were independent of the influence of job placement. Remaining within  $\pm 1$  S. D. of the mean expected work score per vocational category was defined as adequate or average job performance. Greater than  $-1$  S. D. indicated inadequate or sub-average performance;  $+1$  S. D. or more was labelled superior achievement.

#### Schizophrenic Study Group

The schizophrenics generally compared less favor-



ably than their respective controls. Proportionately more were functioning in the subaverage range while more of the controls had superior ratings. About the same percentage of both had average scores although the schizophrenics' scores did tend to sag below the mean expectancy in contrast to those of their matched partners. However, while the trend was quite clear, statistical analysis of the actual numbers falling above and below the mean failed to reach significance.

In essence, this group of employed schizophrenics had about 1 chance in 3 of turning in a subaverage work performance within the industries under scrutiny; 2 out of 3 rated as average or superior. The next step in analysis was to evaluate whether any of the known descriptive characteristics of these people would discriminate the subaverage from the adequate performers. Age, education, vocational level, intelligence test score earned on hiring, number of years employed within the company, number and cumulative length of hospitalizations to date, plus the last known medical contact for psychiatric problems were all examined. Except for one variable, these descriptive features did not appear to carry any predictive power in relationship to rated work ability. Younger schizophrenics had 2 chances in 3 of being rated adequate; so did the older ones. Placement in "white collar" versus "blue collar" positions and so forth showed about the same findings. The one exception was the score from the intelligence test given on hiring. The individuals with higher scores had significantly fewer subaverage performers than those with lower scores. This finding suggests either that more intelligent schizophrenics do have a better prognosis, as others have reported, or that those who score lower on the hiring I. Q. test do so because of their disease impairment, which is reflected also in poorer objective work performance scores.

#### Psychoneurotic Study Group

The psychoneurotic subgroup and their controls were practically indistinguishable in their rated work ability. In terms of meeting the average expectancy

per vocational category, there were 22% in the subaverage performance category, 63% within the median range, and essentially identical percentages functioning in the superior category. A previous diagnosis of psychoneurotic disorder does not appear to make much difference in job performance. Likewise, on internal analysis, a subaverage or adequate work rating did not relate to any of the known descriptive variables of these people.

In evaluating the foregoing results, it should be again noted that the subjects under study represented a special group of former mental patients screened by industry to be part of their working forces. In deciding to employ these people, the exact weight given to their psychiatric histories is not known for the companies reported here, although, from the authors' experiences, the firms would be adjudged as relatively liberal in their employment attitudes. Even so, according to the descriptive characteristics of these subjects' psychiatric illnesses, their known psychiatric histories are not suggestive of disease chronicity. It can be assumed that industrial personnel have screened out the "sicker" patients and offered jobs to those who appeared to be the better employment risks in their judgment. Thus these findings should not be generalized as reflecting the employment capabilities of the mentally ill population as a whole. With more stringent or more lenient hiring policies, the findings reported here might look considerably different.

With the above limitations in mind, however, the psychoneurotic group under study proved to be indistinguishable from their matched controls in rated work ability; essentially the same respective numbers earned subaverage, average, and superior ratings within a given vocational category. While the schizophrenic subgroup, evaluated on the same basis, showed a greater tendency to earn subaverage work ratings than did their controls, two-thirds of these employees still earned average or superior work ratings. These findings cast doubt on the gloomy outlook held by some people, both mental health professionals and employers, concerning the general employability of any former psychiatric patient.

# EDITORIAL DESK

## AMERICAN BOARD OF OB-GYN

### SPECIAL NOTICE

The date of the next Part I (written) examination has been changed and is now scheduled for *Friday, July 1, 1966, at 2:00 P. M.*

Admittance Slips indicating where to report for examination will be sent several weeks in advance to all candidates scheduled for the Part I examination. Candidates are urged to inform the Board office of any change in address.

Applications to take the Part II examination February 20-25, 1967 will be accepted during April or May, 1966. Each application is to include a duplicate list of patients dismissed from all hospitals during the twelve months immediately preceding the month of application.

Current Bulletins and application forms may be obtained by writing to the office of the Secretary,

Clyde L. Randall, MD,  
Secretary and Treasurer  
American Board of Obstetrics and Gynecology  
100 Meadow Road  
Buffalo, New York 14216

### POSTGRADUATE COURSE IN MILITARY OPHTHALMOLOGY

An unclassified postgraduate course in Military Ophthalmology will be conducted by the Department of the Army, at the Sternberg Auditorium, Walter Reed Army Institute of Research, Walter Reed Army Medical Center, Washington, D. C., from 18 through 22 April 1966.

Emphasis will be made on topics of military significance. Papers and panel discussions will be presented on ocular trauma, surgery, disease and ophthalmoscopy, tumors and neuro-ophthalmology and other items of military interest.

Interested Navy ophthalmologists should forward requests for attendance in accordance with BUMED INSTRUCTION 1520.8 Series.

Only a limited number of officers can be authorized to attend on travel and per diem orders chargeable against Bureau of Medicine and Surgery funds. Those officers who cannot be provided with travel orders to attend at Navy expense may be issued

Authorization orders by their Commanding Officer upon confirmation that space is available. Inasmuch as registration is limited, requests should be forwarded as soon as possible.—BuMed, Code 316

### CAPT BRATENAHN RECEIVES AWARD

CAPT Charles G. Bratenahl MC USN, of Bethesda, has been awarded the Joint Service Commendation Medal for his contribution to the Armed Forces Radiobiology Research Institute (AFRRI), during his recent tour there, which included a two-year term as Deputy Director.

The award noted CAPT Bratenahl's dedicated energy in supervising and directing the complicated construction program of the unique radiobiological research laboratory. He was further cited for his leadership in "the successful conception, initiation and establishment of one of the finest experimental pathology and electron microscopy capabilities existent in a military research facility."

Presentation of the award was made by RADM C. L. Andrews MC USN, Commanding Officer of the National Naval Medical Center.

CAPT Bratenahl was reassigned from the AFRRI on November 12, 1965 and has assumed his new duties as Head of the Academic Department, U. S. Naval Medical School, National Naval Medical Center, Bethesda, Md.

Prior to his appointment as AFRRI's Deputy Director (Navy) in 1963, he served there as Chairman of the Experimental Pathology Department for two years.

From 1950 to 1961, CAPT Bratenahl served as Pathologist and Chief of Laboratories at various U. S. Naval Hospitals in California, Hawaii and Florida.

A native of Cleveland, Ohio, CAPT Bratenahl completed his undergraduate education at Williams College, Williamstown, Massachusetts. He received the M. D. degree from the University of Pennsylvania, Philadelphia, in 1943.

CAPT Bratenahl is a Fellow of the American Society of Clinical Pathologists and the College of American Pathologists. He is also a member of the Radiation Research Society, the American Medical Association, the Association of Military Surgeons of the United States, and the American Association for the Advancement of Science.

He lives with his wife and daughter at 6000 Lenox Road, Bethesda, Maryland.—AFRRI, Bethesda, Md.

#### ACKNOWLEDGMENT

In the U.S. Navy Medical News Letter 47(1): 23, of 7 January 1966 under Know Your World, Number 6 should read as follows: That the *Anopheles* mosquito has returned etc.

#### EDITOR'S NOTES

The feature article in this issue of the U. S. Navy Medical News Letter, "New Considerations in Digitalis Therapy," is the first of a planned series of special articles in the field of internal medicine by leading authorities in this field. The series is sponsored by RADM R.O. Canada, Deputy and Assistant Chief of the Bureau of Medicine and Surgery and George H. Reifenshtein MD, Technical Director, Clinical Research and Medical Education, United States Navy.

LCDR Philip J. Torsney MC USN, Head, Allergy Branch, Medical Service, U.S. Naval Hospital, NNMC, Bethesda, Maryland was one of six participating allergists who investigated "The Use of Alum Precipitated Pyridine Pollen Extract in the Treatment of Ragweed Pollinosis." The report of this work appeared in The American Journal of the Medical Sciences 250: 668-675, Dec. 1965.

Robert Van Cleve MD, author of the article "The Rebound Phenomenon—Fact or Fancy?" in this issue, held the rank of Lieutenant Commander, Medical Corps, U. S. Naval Reserve when he was released from duty in 1964. His present address is Cardiac Clinic, Massachusetts General Hospital, Boston, Massachusetts.

Surgery, Gynecology, and Obstetrics for December 1965, vol 121: 1220-1230, includes an excellently illustrated description of his modified radical

mastectomy by Dr. John L. Madden, New York, N. Y.

The interesting development of our knowledge of "The Lymphoblastic Lymphoma of Childhood," also known as "The Burkitt Tumor", "The African Lymphoma" and "The Absurd Lymphoma" through the collaboration of Pathologists and Surgeons of many countries in The Lancet 2: 1225-1227, 11 December 1965 is fascinating reading, at least for Pathologists.

Further reports of the occurrence of ulceration of the small bowel in persons who had received thiazide diuretics and potassium as part therapy for cardiovascular disease appear in the American Journal of Surgery 111: 120-125, Jan 1966 by Marion C. Anderson, Christopher T. Drake and John M. Beal. In all, 10 cases of ulceration are reported four of whom had received such medication; one, a patient with cardiovascular disease, had not. The other five gave no history of cardiovascular disease and no thiazide or potassium had been given; etiological factors in these are listed as: penetration of the bowel by ingested foreign bodies (2), blunt abdominal trauma (1), tumor (2).

Certain technical difficulties particularly in reproducing photomicrographs and pictures of x-ray films, limit in some degree the reproduction of medical articles in the U.S. Navy Medical News Letter. Some such articles are truly "musts" for continuing medical education. Two good examples describe a distinctive type of interstitial pneumonia: Desquamative Interstitial Pneumonia in the American Journal of Medicine 39: 369-404, September 1965 by Averill A. Liebow, Arthur Steer and James G. Billingsley, and Desquamative Interstitial Pneumonia in The New England Journal of Medicine 274: 113-128, Jan 20, 1966 by Edward A. Gaensler, Anne M. Goff and Clive M. Prowse. While you are at it, read the editorial in the latter journal, pages 161 and 162 about DIP.—Editor



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